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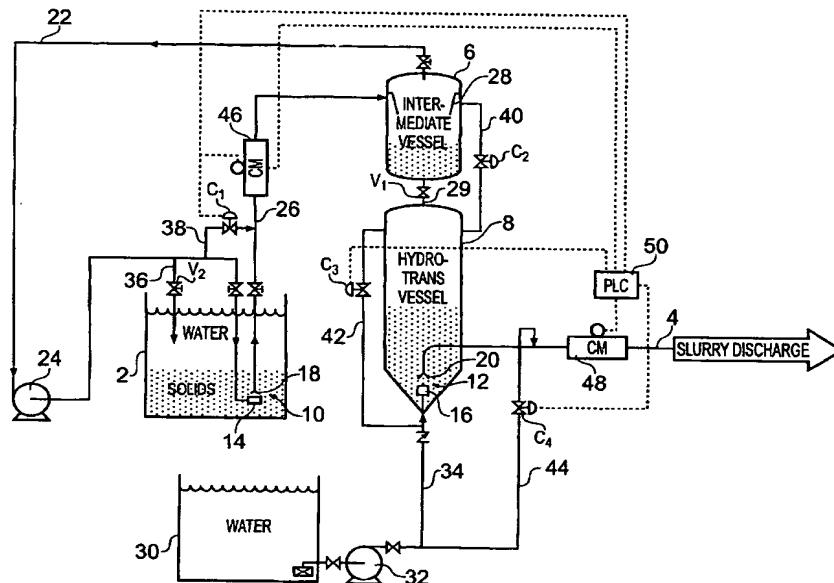
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[Continued on next page]

(54) Title: APPARATUS AND METHOD FOR TRANSFERRING SETTLED OR SUSPENDED SOLIDS FROM AN OPEN VESSEL INTO A CLOSED VESSEL



(57) Abstract: Apparatus for transferring settled or suspended solids from an open vessel (4) into a closed vessel (6), the apparatus comprising a suction line (22) which extends from the closed vessel (6) to the open vessel (4) via drive means (24), such as a pump or compressor, and a solids feed line (26) which extends from a solids outlet (18) in the open vessel (4) to a solids inlet in the closed vessel (6), a fluidising apparatus (10) being provided to fluidise the solids in the open vessel (4).



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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INTERNATIONAL SEARCH REPORT

Intern | Application No
PCT/GB 03/04695

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B65G53/30 B08B 093

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 B65G B08B E21B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2 010 538 A (CLEMENT EVANS RONALD) 6 August 1935 (1935-08-06)	1,19
Y	page 1, left-hand column, line 5 - line 13; figures 24,25,27 page 3, right-hand column, line 65 - line 75	2-5
Y	----- US 4 721 126 A (HORII KIYOSHI) 26 January 1988 (1988-01-26) column 1, line 6 - line 12; figure 1 column 6, line 7 - line 62	2-5
X	----- CA 2 315 670 A (C FER TECHNOLOGIES 1999 INC) 11 February 2002 (2002-02-11)	1,19
Y	page 4, paragraph 2 - page 5, paragraph 1; figures 1,2	2-5
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

13 February 2004

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB 03/04695

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 033 545 A (SUDOL TAD A) 23 July 1991 (1991-07-23) column 5, line 37 - line 60; figures 5,5A -----	2-5
X	US 5 167 841 A (MIMS KEN) 1 December 1992 (1992-12-01) column 1, line 36 - column 2, line 13; figures 1-3 -----	1,19
X	US 4 707 277 A (MIMS KEN) 17 November 1987 (1987-11-17) column 9, line 4 - line 43; figures 1-3 -----	1,19
X	DE 17 56 836 A (HOELTER HEINZ) 27 August 1970 (1970-08-27) page 1, paragraph 1 - page 3, paragraph 1; figure 1 -----	1,19
X	US 3 993 146 A (MILLER WILLIAM J ET AL) 23 November 1976 (1976-11-23) column 1, line 51 - column 2, line 8; figures 1,2 -----	1,19

INTERNATIONAL SEARCH REPORT

In International Application No.
PCT/03/04695

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-5, 19

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-5,19

APPARATUS FOR TRANSFERRING SETTLED OR SUSPENDED SOLIDS,
WHEREIN THE FLUIDISING APPARATUS COMPRISES A FLOW CHAMBER

2. claims: 6,7

APPARATUS FOR TRANSFERRING SETTLED OR SUSPENDED SOLIDS,
WHEREIN RATE OR CONCENTRATION CONTROL MEANS ARE PROVIDED

3. claims: 8-18,22-25,27

APPARATUS AND METHOD FOR TRANSFERRING SETTLED OR SUSPENDED
SOLIDS, WHEREIN THE SUSPENDED SOLIDS OF THE CLOSED VESSEL
ARE TRANSFERRED TO A TRANSPORT VESSEL

4. claim: 20

METHOD FOR TRANSFERRING SETTLED OR SUSPENDED SOLIDS, WHEREIN
THE FLUID IS DRAWN FROM THE CLOSED VESSEL TO THE OPEN VESSEL
BY MEANS OF A PUMP OR COMPRESSOR

5. claims: 21,26

METHOD FOR TRANSFERRING SETTLED OR SUSPENDED SOLIDS, WHEREIN
THE FLUID IS RECIRCULATED BETWEEN THE CLOSED VESSEL AND THE
OPEN VESSEL

6. claims: 28, 29

METHOD FOR TRANSFERRING SETTLED OR SUSPENDED SOLIDS, WHEREIN
MATERIAL IS REMOVED FROM THE SEA BED

7. claim: 30

METHOD FOR TRANSFERRING SETTLED OR SUSPENDED SOLIDS, WHEREIN
RADIOACTIVE WASTE SOLIDS ARE REMOVED FROM STORAGE PONDS OR
TANKS

8. claim: 31

METHOD FOR TRANSFERRING SETTLED OR SUSPENDED SOLIDS, WHEREIN
MATERIAL DEPOSITED AT THE BASE OF A MINE SHAFT IS CONVEYED
TO A TRANSPORT VESSEL

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

9. claim: 32

METHOD FOR TRANSFERRING SETTLED OR SUSPENDED SOLIDS, WHEREIN
A MATERIAL IS DIRECTLY CONVEYED INTO THE SUCTION LINE OF A
SLURRY PUMP AT CONCENTRATIONS AND/OR PRESSURES MATCHED TO
THE PUMP'S CHARACTERISTICS

INTERNATIONAL SEARCH REPORT

Intern Application No
PCT/GB 03/04695

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